

SOME ANTHIDIINE BEES FROM MEXICO (HYMENOPTERA:
MEGACHILIDAE)¹

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Abstract This paper consists of (1) descriptions of a new genus (*Aztecanthidium*) with two new species of Mexican Anthidiini, (2) the first North American record of a genus hitherto known only from South America (*Nananthidium*), with the description of a new species, and the first description of males of the genus, and (3) the first description of the male of the remarkable Mexican genus *Ulanthidium*.

Except as otherwise indicated the specimens on which this paper is based are in the Snow Entomological Museum of The University of Kansas.

Aztecanthidium new genus

Type species: *Aztecanthidium xochipillium* new species.

This genus, known only from Mexico, contains species which superficially look similar to *Paranthidium*, subgenus *Mecanthidium*, being large red-brown, elongate bees with little hair. The color patterns are variable, with restricted black markings chiefly on the head and thorax, and yellow markings on individuals from the latitude of the southern end of the plateau of Mexico, a trend found also in *Mecanthidium*. In spite of these similarities, this genus differs from all *Paranthidium* by the fact that the seventh metasomal tergum of the male is bilobed rather than produced into a median prolongation. In this respect it is similar to *Trachusa*, *Heteranthidium* and the Old World genus *Paraanthidium*. The mandibles have one or more teeth along the cutting edge, unlike *Mecanthidium*. The maxillary palpi are three segmented as in *Paranthidium*, but the segments are covered with long bristles. The preoccipital ridge is strongly carinate for its entire length, down to the hypostomal carinae at the sides. This feature is unlike *Paranthidium* although in the subgenus *Mecanthidium* the ridge is weakly carinate dorsally. Unlike the genus *Paranthidium*, the pronotal lobes are carinate rather than lamellate and the clypeus is protuberant, especially in the females where it is roughened or modified apically, depending on the species.

In Michener's (1948) key to genera of the Anthidiinae of the Western Hemisphere, *Aztecanthidium* runs to *Allanthidium* except that the tergal margins are broadly depressed. It differs further from *Allanthidium* in the much larger size, the preoccipital carina, the absence of pits at the base of the propodeum, the bituberculate scutellum, and other characters.

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² Submitted for inclusion in the **Herbert F. Schwarz Memorial Volume** (1962) but delayed in publication due to lack of space, cf, 70 p. 214.

Body rather large, elongate, reddish-brown in color, with or without black or yellow markings. HEAD with protuberant clypeus in both sexes, overhanging base of labrum, roughened or modified in females; maxillary palpus three segmented, long and bristly; second segment of labial palpus one third as long as first; mandible with at least one large distinct tooth in addition to long, oblique, apical tooth, oriented in a forward position in relation to lower margin of eye; subantennal suture short and straight, equal to or only slightly longer than diameter of antennal socket in females, a little longer in male; eye with lower margin oblique and angulate, inner orbit margined by strong carina; preoccipital ridge strongly carinate above and laterally, the carina joining hypostomal carina ventrally; distance between posterior ocelli and preoccipital ridge two or more times as great as distance between ocelli. THORAX with pronotal lobe carinate; mesepisternum with weak carina separating anterior from lateral surface; tegula with anterior margin short and rounded, posterolateral margin long and oblique, tegula pointed at outer posterior corner, surface with shallow punctures, spaces between punctures equal to their diameters; scutoscutellar suture without transverse sulci; scutellum rounded and weakly to distinctly bilobed posteriorly; propodeum without row of pits across upper or lateral margin and without postspiracular sulcus; posterior coxa of males not toothed; outer surfaces of tibiae (hind tibia of male and female, front and middle tibiae subapically in female) with large coarse spicules; posterior tibial spurs strongly curved apically; arolia present; cubito-vannal vein of forewing interstitial with media; second recurrent vein only slightly beyond second transverse cubital. Metasoma with margins of terga broadly depressed, less strongly so than in *Heteranthidium*; first tergum not carinate but with line between anterior and dorsal surfaces; fifth tergum of male with one spine laterally, sixth tergum of male with two spines laterally; seventh tergum of male bilobed medially with deep emargination between lobes; first sternum of both male and female thickened and truncate apically when viewed in profile; second sternum of male flat; apical margin of sixth sternum of male convex medially with no lobes or emarginations.

The two species of *Aztecanthidium* can easily be distinguished by the following tabulation:

	xochipillium	cuauhtemocum
scutellum	strongly bilobed, lobes overhanging metanotum	weakly bilobed, not overhanging metanotum
dorsal metasomal yellow pattern (often absent)	transverse bands, reduced posteriorly, on third and following terga	median spots, enlarged posteriorly, on third and following terga
fourth tergum of male	with lateral spine	without lateral spine
emargination of seventh tergum of male	wider than deep	deeper than wide
mandible of female	quadridentate; apex broad; axis not obviously bent	tridentate, median tooth truncate; apex narrow; axis bent down medially
apex of labrum of female	emarginate	tridentate
clypeus of female	rounded in profile and roughened	angulate and projecting in profile, with strong biarcuate carina

***Aztecanthidium xochipillium*¹ new species**

¹ From Xochipilli, god of Spring and of flowers (Sho-chee-peé-ly).

MALE Length 14 to 16 mm. Body reddish-brown with black and yellow markings. Punctures deep and coarse on head and thorax, distinct and widely separated on metasoma. Pubescence yellowish over entire body, paler beneath, browner above. **HEAD** broader than long, red-brown; inner orbits slightly diverging below (lower parts strongly so); clypeus bright yellow, convex, coarsely punctate; lower part of paraocular area yellow, indistinct yellow spot between ocelli and eye; band along subantennal suture and antennal socket black, joining black area of frons which surrounds ocelli (some paratypes with subantennal suture, antennal socket and ocelli only margined with black, antennal fovea black); supraclypeal and paraocular areas, frons and vertex coarsely and closely punctate; supraclypeal area with median shiny impunctate area just above clypeus; distance from lateral ocellus to eye slightly greater than distance between lateral ocelli (equal, to slightly greater in paratypes); genal area slightly narrower than eye seen from side, deeply and regularly punctate; labrum dark yellow, flat, broader basally than apically, apical margin slightly concave; mandible with lower two teeth black, with long oblique apical (first) tooth, obtusely pointed second tooth and short pointed third tooth; apical edge slightly less than half as long as mandible, partially obscured by outer brush of short dense hairs, cluster of setae on inner surface at base of third tooth, oblique ridge on inner surface at middle of mandible parallel to apical edge and bearing setae; antenna with first three segments reddish-brown, the remaining segments black (among paratypes, fourth segment variable); scape more than three times as long as broad, pedicel slightly longer than broad, flagellar segments longer than broad.

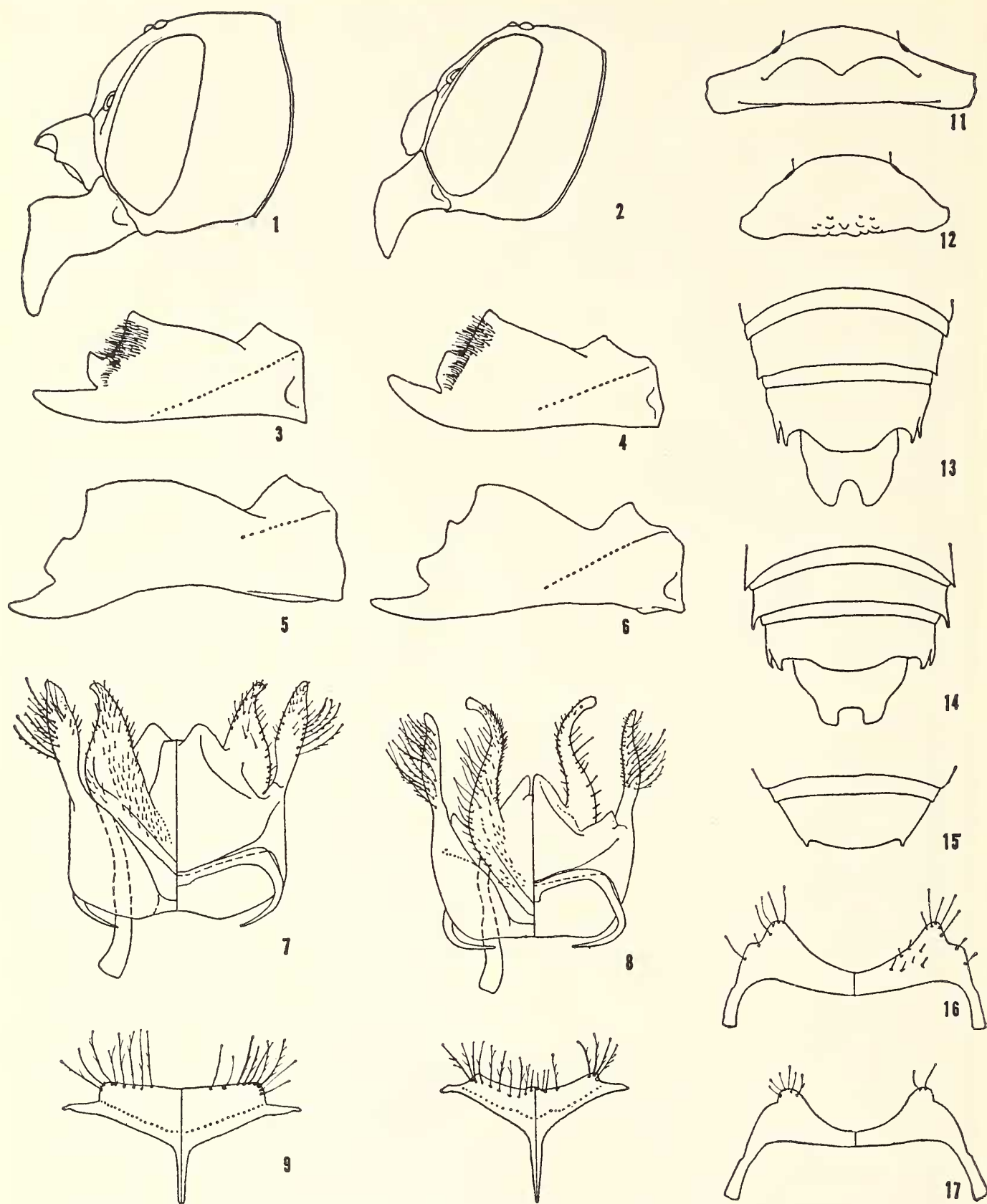
THORAX Pronotum black, lobe and dorsolateral angle sometimes brown; scutum coarsely punctate, reddish-brown with black triangular area anteriomedially, with yellow along rest of anterior margin, fading into yellow-brown posteriorly and laterally; tegula brown, yellowish anterolaterally; scutellum red-brown, coarsely punctate, bilobed, the lobes yellow apically and extending beyond metanotum; axilla red-brown; metanotum narrow, slightly wider medially, black and brown (entirely black in some paratypes), roughened; propodeum dull, longitudinal median band impunctate but minutely roughened, well separated punctures elsewhere, dense yellowish-brown pubescence between posterior and lateral surfaces; pleuron black (some paratypes with brown patches variably located); mesepisternum with large punctures, metepisternum with punctures smaller but irregular in size; wings smoky, especially apically and costally, marginal cell especially dark, wings papillate distally; legs including tibial spurs reddish-brown; fore femur more than three times as long as broad at widest point, other femora less than three times as long as broad; tarsi slightly lighter in color than tibiae but without much color contrast, hind basitarsi slightly longer than remaining tarsal segments, other basitarsi slightly shorter than their remaining tarsal segments; claws with basal halves yellow and apical halves dark reddish-brown or blackish. **METASOMA** reddish-brown, first and second terga each with yellow spot laterally, third, fourth and fifth terga each with broad yellow area medially in front of depressed margin, extending laterally to side of tergum as narrow line just in front of depression (yellow of metasoma absent in one paratype); terga with punctures separated by spaces subequal to their diameters medially, closer laterally; fourth tergum with inconspicuous lateral spine; fifth tergum with longer conspicuous lateral spine; sixth tergum with two large spines on each side, apical margin convex, convexity subtruncate medially in holotype but rounded in some paratypes; seventh tergum bilobed, with semicircular emargination (deeper than semicircle in holotype) between lobes, distance between apices of lobes greater than depth of emargination; sterna blackish basally, shiny with punctures widely spaced medially,

becoming closer laterally; apical margins of sterna straight, except for sixth which is strongly convex medially.

FEMALE Length 15 to 17 mm. Agrees with the description of male except in the following characteristics: HEAD Inner orbits strongly diverging below; clypeus reddish-brown apically, protuberant and roundly angulate, lower portion forming obtuse angle to upper part as seen in profile, surface roughened with deep punctures basally, longitudinal median line impunctate (variable among paratypes), anterior portion rough and tuberculate, apical margin with small depression formed between two tubercles medially, reddish-brown bristles along apical margin; subantennal suture, antennal socket and fovea black, ocelli narrowly margined with black (extent of black markings variable among paratypes), fovea strongly carinate on inner side, carina smooth and shiny; distance from lateral ocellus to compound eye about one and a half times greater than distance between lateral ocelli; genal area as broad as eye seen from side; mandible with four approximately equidistant teeth, the second and third broadly conical, no brush of hair along apical edge which is more than half as long as mandible; antenna with first four segments brown the rest black, flagellar segments slightly longer than broad. THORAX Anterior median black area of scutum semicircular; large brown areas on episterna and sometimes sides of propodeum; legs of uniform color throughout, basitarsi subequal in length to remaining tarsal segments. METASOMA reddish-brown with yellow markings as in male, sixth tergum with large median yellowish patch; fourth and fifth terga without lateral spines; fifth and sixth terga rough, with deep punctures containing short stout brown setae in addition to pale pubescence; sixth tergum with subapical lateral spine and subtruncate or in some paratypes broadly rounded apex; sterna densely punctate with long, heavy, yellowish white scopal hairs.

HOLOTYPE male and allotype female, 17 miles north of Chilpancingo, Guerrero, Mexico, 2,550 feet elevation, August 13, 1962 (Ordway & Roberts). Paratypes: one female collected with types; one female, same locality, August 7, 1962 (N. Marston); one male, same locality, August 13, 1962 (Univ. of Kansas Mexican Exped.); one male, one female, 23 miles north of Taxco, Guerrero, Mexico, August 8, 1954 (Univ. of Kansas Mexican Exped.); one male, 7 miles northeast of Yautepec, Morelos, Mexico, 4,000 feet altitude, August 15, 1962 (*Leguminosae*) (Ordway & Roberts); one male, Alpuyeca, Morelos, Mexico, June 26, 1951 (P. D. Hurd, Univ. of California).

In addition to the type material listed above from the states of Guerrero and Morelos, a series of specimens from the state of Nayarit is at hand. Like such northwestern material of the superficially similar *Paranthidium* (*Mecanthidium*) *macrurum* (Cockerell), that of *A. xochipillium* from Nayarit is more uniformly red-brown than southern material. Yellow markings are absent except for the clypeus and lower parts of the paraocular areas of the males. Black markings are also often somewhat reduced although the anterior median black area on the scutum often extends as a median band to the posterior margin of that sclerite. Although the comparable form of *macrurum* has been given the name *sonorum* Michener, we do not think that there is any advantage to naming the geographical color variant of *xochipillium*. Specimens are from Ahuacatlan, Nayarit, July



1-17, *Aztecanthidium cuauhtemocum* and *A. xochipillium*. All pairs of illustrations in that order; all divided illustrations with dorsal side at left. 1 and 2, Side views of heads of females. 3 and 4, Mandibles of males. 5 and 6, Mandibles of females. 7 and 8, Genitalia for males. 9 and 10, Eighth sterna of males. 11 and 12, Clypei of females. 13 and 14, Apices of abdomens of males. 15, Apex of abdomen of female of *A. xochipillium*. 16 and 17, Seventh sterna of males.

18 to 22, 1951 (H. E. Evans and P. D. Hurd). Some of them were taken on flowers of *Donnellsmithia hintonii*.

***Aztecantidium cuauhtemocum*¹ new species**

MALE Length 17 to 20 mm. Agrees with description of *A. xochipillium* except as follows: HEAD red-brown with clypeus and lower parts of paraocular areas yellowish-brown, antennal fovea and spot enclosing ocelli black; supraclypeal area punctate throughout; labrum red-brown; second mandibular tooth acute, oblique ridge of inner surface of mandible inconspicuous; antennal pedicel about as long as broad. THORAX red-brown with black areas on sides and dorsum of pronotum and on anterior surface of mesepisternum, small lunate anteromedian area on scutum and small areas below wing bases and on posterior surface of propodeum black; anterior margin of scutum lateral to black area yellowish; sides of scutum, anterolateral parts of tegula, and scutellum more yellowish than most of thorax; scutellar lobes weak, not extending beyond metanotum; tarsi conspicuously yellow in contrast to tibiae; fore and hind femora over three times as long as broad, middle femur less; fore basitarsus about as long as remaining tarsal segments together, other basitarsi slightly shorter than remaining tarsal segments. METASOMA reddish-brown, apical margins of first three terga blackish (not in paratype); extreme sides of terga and sterna with small yellow areas (most conspicuous on first and second terga) in paratype only; paratype but not holotype with middorsal yellow areas on third to seventh terga, smallest on third and increasingly large posteriorly; fourth tergum without lateral spine, fifth with rather weak lateral spine (apex scarcely acute), seventh with emargination deeper than its width.

FEMALE Length 17 to 18 mm. Agrees with description of female of *xochipillium* except as follows: HEAD with clypeus slightly yellowish only laterally, strongly protuberant, scarcely produced downward over base of labrum, median part of clypeus strongly projecting anteriorly and forming strong biconvex carina, surface above carina subhorizontal and at acute angle to surface below it; clypeal punctation weak and scattered; lower parts of paraocular areas weakly yellowish; black markings reduced as in male (or almost entirely wanting); carina along inner side of antennal fovea with some punctures, not smooth; genal area much broader than eye seen from side; mandible slender, curved downward medially, with three apical teeth, median one broad and truncate; apex of mandible distinctly less than half as long as mandible; apex of labrum tridentate; second flagellar segment slightly broader than long (or about as long as broad). THORAX as in male; tarsi yellowish except for the reddish-brown hind basitarsi. METASOMA in allotype red-brown, first four terga blackish premarginally, sixth tergum with large median yellowish area; in paratype with small yellow areas at extreme sides of first two terga and at extreme sides of third and fourth terga and sterna, third to sixth terga with median yellow areas, small on third, to large and occupying most of dorsum on sixth. Pubescence including scopa more brown than in *xochipillium*.

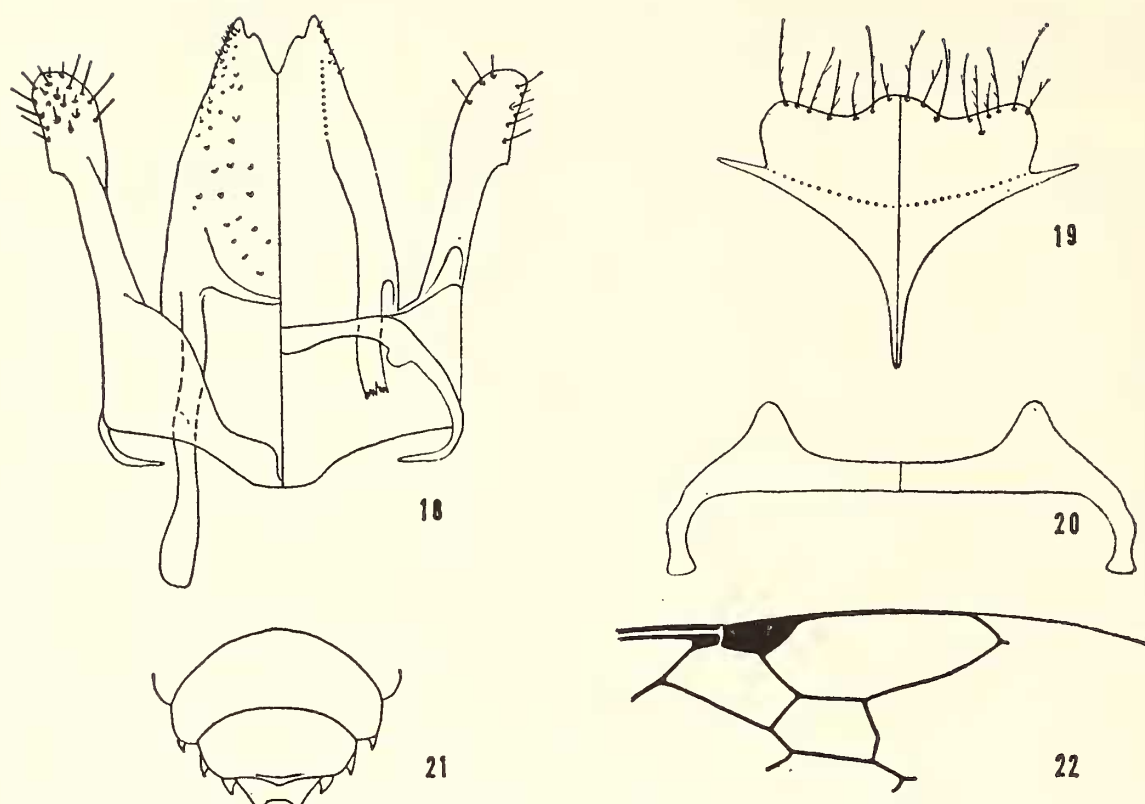
HOLOTYPE male, allotype female, and a paratype of each sex: 2 miles south of Tzitzio, Michoacan, Mexico, 4,450 feet elevation (on Leguminosae) (M. Naumann).

Genus *Nananthidium* Moure

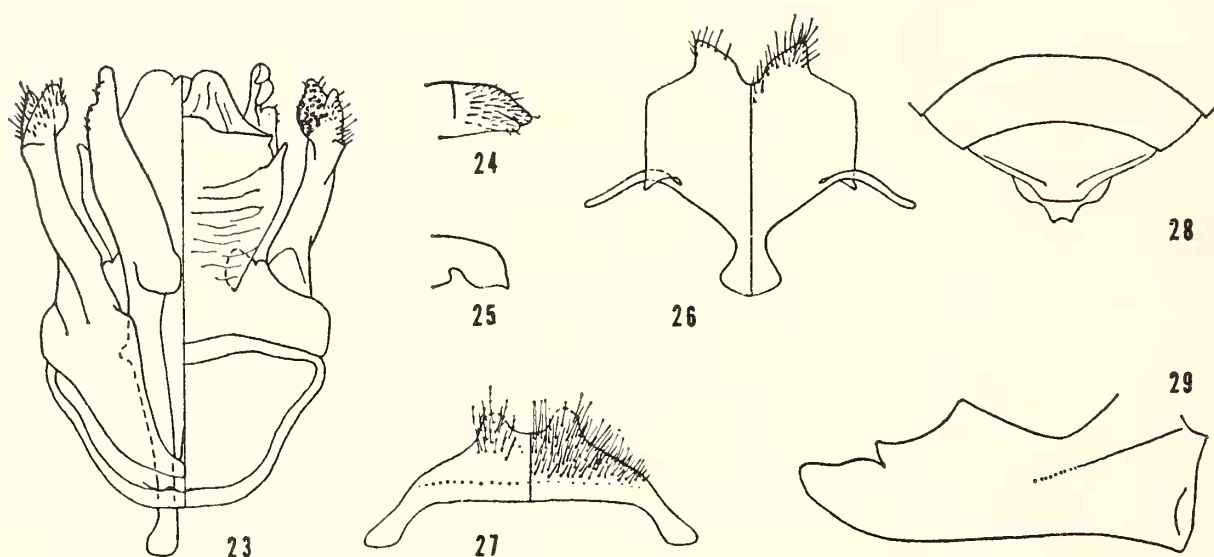
Nananthidium Moure, 1947: 26.

This genus, which is unique among North American Anthidiini in its slender, heriadiform body, was characterized by Moure (1947) and more briefly by Michener (1948). It has hitherto been known only from two

¹ From Cuauhtemoc, last emperor of Tenochtitlan (Kwow-teý-moc).



18-21, *Nananthidium bettyae*, male. Divided illustrations have dorsal side at left. 18, Genitalia. 19, Eighth sternum. 20, Seventh sternum. 21, Apex of abdomen; teeth at sides are lateral sternal teeth. 22, Stigma and adjacent parts of wing.



23-29, *Ulanthidium mitchelli*?, male. Divided illustrations have dorsal side at left. 23, Genitalia. 24, Side view of apex of gonoforceps. 25, Side view of apex of penis valve. 26, Eighth sternum. 27, Seventh sternum. 28, Apex of abdomen. 29, Mandible.

southern South American species, as indicated below :

Nananthidium bettyae Moure, 1947, was described from Porto Cabral (on the Rio Paraná), São Paulo, Brazil. Additional specimens before us (in the Snow Entomological Museum) are from Silvestre, Baía de Guanabara, Rio de Janeiro, Brazil, April 1961 (M. Alvarenga); Nova Teutonia, Santa Catarina, Brazil, March 16, 1950 (F. Plaumann); Caaguazu, Paraguay, December, 1958 (F. H. Walz); Tropical region, Chapare, Bolivia,

400 meters altitude, October 25 (Zischke); and Rurrenabaque, Beni, Bolivia, 175 meters altitude, October 5, 17, and 23, 1956 (L. Peña).

Nananthidium willineri Moure, 1947, was described from San Estanislao, Paraguay. Material before us (in the Snow Entomological Museum) is from Paso Yobai, Paraguay, November 9, 1951 (J. Foerster); San Pedro de Colalao, Tucumán, Argentina, January, 1958 (F. H. Walz); Pocitos, Salto, Argentina, December 12, 1956 (M. Fritz); Santiago, Santa Cruz, Bolivia, November, 1959; Roboré, Santa Cruz, Bolivia, October, 1959.

The differences in structure and punctuation between the two species, as described by Moure, disappear in the larger series now available. *N. willineri* may be a subspecies of *bettyae*. A male and female from Peru (one of them from the Chanchamayo Valley, 800 meters altitude) are similar to *bettyae* but somewhat different and may represent a distinct species.

The male of *Nananthidium* was unknown when Moure and Michener dealt with the genus in 1947 and 1948. Males of all three species are now available, and the following description applies to all of them:

Small, slender, heriadiform, with exceedingly coarse punctuation, and with carinae and foveae as in female; clypeus as in female with a few small nodules on apical margin; mandible with apex tridentate, the upper two teeth weak and forming ends of a nearly straight margin; antenna long for an anthidiine, reaching scutellum (or nearly so in *tamaulipanum*), scape scarcely over twice as long as broad, pedicel slightly longer than broad, first flagellar segment seen from beneath much broader than long, from above about as long as broad, remaining flagellar segments subequal in length (last a little longer), flagellum tapering slightly toward apex so that preapical segments are twice as long as wide in *bettyae* and *willineri*, somewhat shorter in *tamaulipanum*; second to fifth metasomal sterna with dense subapical bands of white hair, hiding surfaces beneath them; fourth to sixth sterna each with strong lateral tooth simulating lateral tergal teeth of some anthidiines, teeth of sixth sternum looking like lateral teeth of seventh tergum; terga without teeth; seventh tergum bilobed or bidentate with broad shallow emargination between lobes.

The discovery of a species of the arid part of northeastern Mexico suggests that this is another genus, like *Eulonchopria* and *Caupolicana*, found on either side of the tropical region but not widespread in the equatorial zone.

Nananthidium tamaulipanum new species

This species is very similar to *N. bettyae* from which it differs primarily in its slightly larger size and in the weak median emargination of the posterior edge of the scutellum. It also has somewhat less extensive and paler yellow markings than that species, the sixth tergum of the female being wholly black, and the scape and legs are black. A possible difference (based on the single male of *tamaulipanum*) is the slightly broader shallower emargination of the seventh tergum of the male. However, the Mexican form is so like *bettyae* that we possibly would not separate it were it not for the distance of some 3,000 miles from the northernmost South American locality for the genus (Peru) to the Mexican one.

FEMALE Length 7 mm. (varying from 6 mm. to 7.5 mm. among paratypes); forewing length 4.6 mm. Agrees in structure, and punctuation with other *Nananthidium* except as indicated in the following description: Black, under side of second and following

flagellar segments brown, the second more extensively pale than others; tegula translucent brownish-black; apices of tarsi slightly brownish; the following parts pale yellow: band along inner orbit from lower end of paraocular area, tapering upward, to point well above antennal base, small upper lateral spot on clypeus adjacent to yellow of paraocular area, medially broken transverse line behind ocelli (not extending laterally behind eyes as in *bettyae*), narrow line (broadly broken medially and sometimes reduced to two small spots) across front margin of scutum, small spot on axilla, broad apical band (narrowly broken medially in holotype) across scutellum, spot at side of first metasomal tergum, transverse arcuate line at side of second tergum (first and second terga marked as in *bettyae*), and narrow median bands, tapered laterally, across third to fifth terga, these bands not reaching extreme sides of fifth and often fourth terga. Forewing heavily infumated in costal third in vicinity of prestigma and beyond.

MALE Length 6 mm.; forewing length 4.4 mm. Coloration similar to that of female but anterior side of front tibia brown, front and to a lesser extent middle tarsi brown; clypeus except for anterior margin pale yellow; lower paraocular area more broadly pale yellow; yellow of scutum reduced to pair of small anterior marginal spots, scutellar band broadly broken, narrow yellow bands on third to sixth terga reaching sides of terga (otherwise yellow markings as in female).

HOLOTYPE female, allotype male, and 23 female paratypes: Llera Mesa, Tamaulipas, Mexico, 1800 feet altitude, June 7, 1961 (Univ. of Kansas Mexican Exped.). The females were collecting pollen from flowers of *Acacia wrightii*.

Genus *Ulanthidium* Michener

Ulanthidium Michener, 1948: 13.

This remarkable genus was described from a single female from the state of Jalisco. A male, taken at a different locality in the same state by the same collector a few days before he captured the holotype, is in the Snow Entomological Museum. Presumably it represents the same species, *U. mitchelli* Michener, 1948. Certainly it represents the same genus and it is therefore possible to describe the male characters of the genus.

MALE Length 11.5 mm.; forewing length nearly 10 mm. Robust, *Anthophora*-like, hairy. Agrees with description of female except anterior margin of clypeus with six small teeth, the lateral ones weak; mandible with apex oblique, tridentate; short simple hairs of clypeus straight and not thickened at their bases; supraclypeal area with some similar hairs but rest of face with long plumose hairs like those of rest of body; pubescence of vertex, dorsum of thorax (including upper parts of mesepisterna), and dorsum of metasoma (except sixth and seventh terga) long, dense, bright fulvous; pubescence otherwise dull whitish, rather long and loose on most of body and basal parts of legs, short and largely appressed on tibiae, tarsi, and sixth and seventh terga; terga without lateral spines, sixth somewhat produced and narrowly subtruncate medially, seventh with short median bilobed projection.

The specimen on which the above comments are based is from Chapala, Jalisco, Mexico, September 11, 1938 (L. J. Lipovsky).

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